iWire365
Redefining Communication Infrastructure

Grid Optimization & Smart Module White Paper

iWire365
Connecting the World One Community at a Time
SMART Energy, Government
Public Safety, Telecommunications,
Business & Home

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Introduction

The SMART Grid approach for water, gas and electricity represents a quantum shift in how resources are used across the United States and around the world. Domestic and global leaders have targeted SMART Grid technologies as the solution for the current outdated, inefficient and costly utilities infrastructures. SMART Grid automates end-to-end monitoring and control of electricity usage from generation to transmission to distribution as well as gas and water to the end-user via telecommunications. This monitoring and management reduces rates and efficiently ensures water, gas and electrical ebbs and flows without major distribution and continue rising of utility rates.

iWire365 has develop revolutionary products and solutions to sit on either end of the networks required to deliver connectivity to public safety, SMART utilities and the in-home user.

1 The Challenge

Simply put, networks need to be upgraded to handle the rapidly rising demand for bandwidth. IPv4 addresses are exhausted and ISPs, web browser giants, social networking sites (a la Google, Facebook, Yahoo, Bing and others) are collaborating intensely in preparation for this event. In fact, on June 8, 2011, "World IPv6 Day" was participated in- and sponsored by over 1,000 such ISPs and major Internet players. The conclusion: browsers and ISPs are ready and anticipating unparalleled traffic but the infrastructure is lagging behind.

Additionally, consumer devices and the consumers themselves are surpassing the technical capabilities of our nation's first and secondary responders, and public service employees. Embarrassingly, every-day citizens are capturing, uploading and disseminating crime-scene- or natural disaster footage on more reliable platforms and at higher resolutions than the public safety officers tasked with these duties.

The nation's first and secondary responders and public workforce rely on multiple devices for workforce mobility and mission-critical voice and data (smart phones, radios, dongles, etc.) without reliable assurances that these networks and/or services will survive catastrophic events. Moreover, this critical connectivity is out of the focus and control of the agencies that need it most, making prioritization of users and preemption impossible.

Deploying career-grade network solutions from major infrastructure players such as Ericsson, Motorola, Cisco, Alcatel-Lucent and others for first and secondary responders and the public workers is an extremely costly and terribly inefficient endeavor. For instance, establishing a network with a standard LTE core for a mid-sized town on the Southwest border such as Laredo, TX, could cost up to $10M in order to serve only 1,000 users with voice, video and data despite having the capacity to supply connectivity to up to 150M users. In sum, advanced wireless solutions need change to become more accessible to public markets.

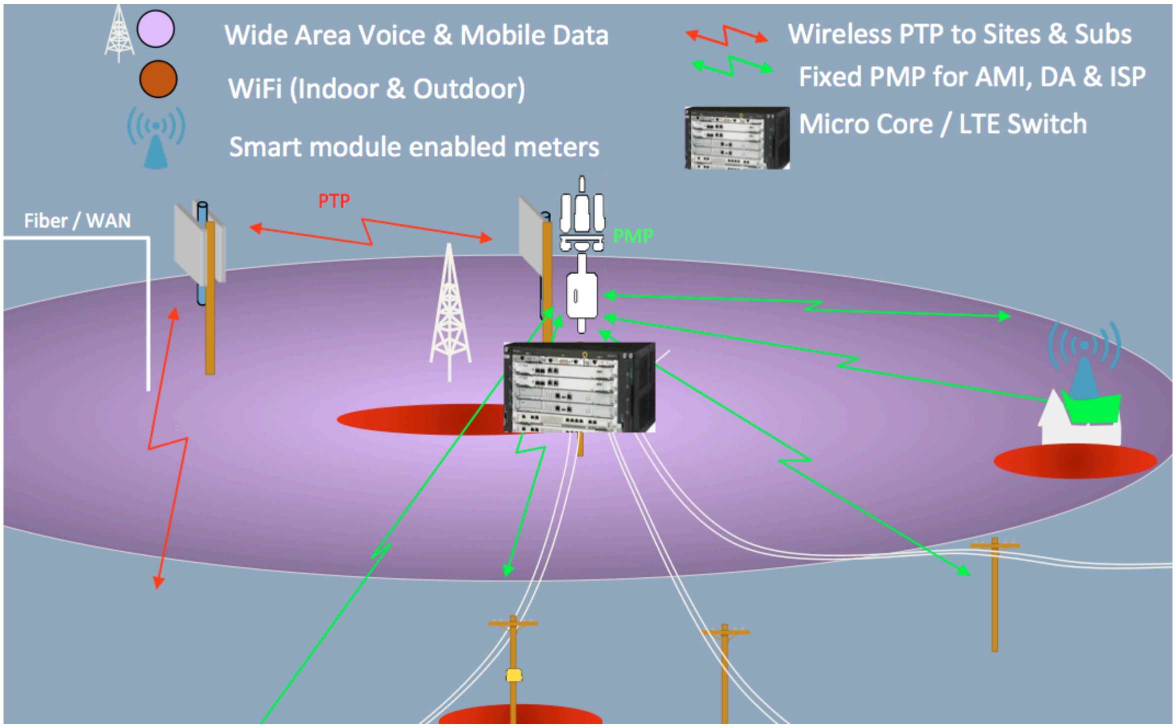
Not only do network and network solutions need to change for private and public consumers, but also for supporting radical changes to the infrastructure of the utility markets. SMART Grid represents a quantum shift in how water, gas and electricity are used across the United States and around the world. Domestic and global leaders have targeted SMART Grid technologies as the solution for the current outdated, inefficient and costly utilities infrastructures and this market is expected to grow to $19B by 2015. SMART Grid automates end-to-end monitoring and control of electricity usage from generation to transmission to distribution to the end-user via telecommunications. The same model applies to water and gas. This monitoring and management reduces rates and efficiently ensures water, gas and electric ebbs and flows without major distribution and continue rising of utility rates.

Recent SMART Grid projects across the United States have primarily been funded through Department of Energy grants and taxpayer dollars. Through 2010, Stimulus Funds from the Federal Government aimed at jumpstarting of the SMART Grid deployment. This model did not actualize the rapid growth pathway of SMART Grid expected. The result has been a slow down in the SMART Grid market domestically. The recent sluggish growth has also been fueled by an absence of technological innovation and an inability for current SMART Grid deployments to demonstrate even modest returns on infrastructure investment.

A comprehensive plan coupled with requisite funding has not materialized for large-scale SMART gird deployments. Municipal spaces have been left to build and manage these networks on their own at an enormous price point with little return promised returns on their investments.

2 The Solution

iWire365 has developed the critical components of the telecommunications network infrastructure and build out these networks to provide unparalleled value for a wide range of consumers (infrastructure companies, public municipalities, public safety-/service agencies, and in-home users). These products and this network is illustrated in the following diagram:


Wide Area Voice & Mobile Data
WiFi (Indoor & Outdoor)
Smart module enabled meters
Wireless PTP to Sites & Subs
Fixed PMP for AMI, DA & ISP
Micro Core / LTE Switch
Fiber / WAN
PTP
PMP

Applications, Services, Features and Benefits

The iWire365 SMART module proof of concept is on display at Fire Station #10 in Corpus Christi, TX. It contains an AMR network processor, and has been designed specifically to address the needs of Automatic Meter Reading (AMR) equipment. The board's miniature size allows it to be embedded inside most standard water, gas and electric meters. The AMR Network Processor uses a PCI Express Mini Card to provide support for a wide variety of current and next generation radio modules. These modules include 802.11 ab/g, 802.11n, 4G WiMax, CDMA and GSM & CDMA cellular. Additional radio functionality can be provided using an onboard expansion connector that allows support for ZigBee and Bluetooth mezzanine modules.

Additionally, the SMART module delivers in home broadband through the creation of a home area network (HAN). The SMART Module is capable of delivering broadband speeds to end-users homes in excess of 100 Mbps. The broadband speed is limited by the availability of backhaul connectivity provided by the utility or local exchange carriers. Typical speeds provide connectivity at 10 Mbps. This speed will be in excess of the limited broadband connectivity current available in regions of the United States where broadband is limited or non-existent. Broadband services are often available through satellite which is costly with average speeds around 1.5 Mbps or if available DSL or dial-up.

The SMART module will be exponentially valuable in the municipal centers in which it is deployed because it accomplishes the following:

- Automated meter reading (AMR);
- Delivers high speed broadband internet into the home wirelessly through the power meter; and
- Remote switching capabilities.

Through AMR, utility companies, electrical cooperatives and city services reduce operational expenses associated with personnel and equipment because in-person meter reading is no longer required.

This is nothing new to the SMART Grid market that is an environment with many companies providing meter technology that delivers data remotely. However, the iWire365 SMART module drastically expands communication to create a Home Area Network (HAN) that engages the consumer.

Essentially, the iWire365 SMART module will be the device that delivers Internet into the home wirelessly, and the utility company and/or municipality will have the option to become the Internet service provider (ISP). The vision with the SMART module is that through a standard power meter a residence will enjoy high-speed, low-latency broadband internet, monitor their own power usage, direct multi-media consumption through internet protocol TV and other internet- based/on-demand programming (Hulu, Netflix, etc.), and utilize voice over internet protocol (VoIP) phone services.

For the consumer, the SMART module erases the need for routers, set-top boxes and standard phones. With the SMART module the consumer can remotely monitor home energy us, quickly analyze inefficiencies and start using the Internet at broadband speeds. For the power company (private utility, regional cooperative, etc.) the SMART module is a multistage device that ultimately delivers (and thereby controls) content to the consumer. In other words, once deployed, the power company decides how and when to employ the various functions of the SMART module. Initially, the power company could use only the automated meter reading capabilities of the SMART module. A year after deploying the devices, the power company could begin offering high-speed Internet in the home through the power, water and/or gas meter via the SMART module.

Current SMART gird deployments use wide-band, narrow-band or cellular connectivity. These structures offer no returns on investment, and are most often financed through local taxes or public or private bonds.

3 Business Value

Essentially, the iWire365 SMART module is a device that delivers Internet into the home wirelessly, and the utility company and/or municipality will have the option to become the Internet service provider (ISP) either direct or in partnership with the local exchange carrier. The vision with the SMART module is that through a standard power, water or gas meter a residence will enjoy high-speed, low-latency broadband internet, monitor their own power usage, direct multi-media consumption through internet protocol TV and other internet-based/on-demand programming (Hulu, Netflix, etc.), and utilize voice over internet protocol (VoIP) phone services.

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Current SMART gird deployments provided by the majority of AMI vendors use either wide-band, narrow-band or cellular connectivity. These structures offer no returns on investment, and are most often financed through local taxes or public or private bonds.

4 Conclusions

iWire365 has developed a reputation for network integration services by successfully advising municipalities on efficient solutions for their network needs. In building relationships across south Texas, iWire365 has developed a knack for describing a cost effective model for networks linked to SMART Grid. The main barrier for these municipal governments is not demand; it is access to capital to cover the much-needed infrastructure. Understanding this and assessing a wide-range of market factors, iWire365 has developed a simple approach: “Build it and they will come.” iWire365 is deploying advanced wireless networks and SMART Grid infrastructure in order to serve data subscribers and in-home users using a variety of spectrum frequencies (700 Mhz “D” block, EBS, 2.3, 2.5, 2.6, and others) and support smart homes.

5 About iWire365

iWire365, LLC is a Dallas, Texas-based telecommunication and technology company dedicated to developing the most advanced telecommunication networks and deploying network solutions for complex needs.

iWire365 utilizes next generation network infrastructure (Fiber Optics, Wireless, Cloud Computing, BPL, etc.) and cutting edge smart metering devices to create a smarter, faster with multi-faceted telecommunication future. Over the course of the last two years of operation, iWire365 has forged crucial alliances, partnerships and business development opportunities to establish foundational pillars, in route to realizing a major technological upgrade and unparalleled efficiency in the utility, municipality, and public safety communications networks.